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ISO 9001
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Certification

natutech | duurzame groothandel

MODELS P, PR AND PR2
BUFFER WATER HEATERS

USER'S MANUAL

V 0.1

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d) If on customer's request, and when there is reason for urgency, the customer demands immediate replacement of the product he has claimed warranty for, before the decision as to the claim has been made, said request shall be accompanied by a Purchase requisition from the Commercial Department. After a decision for satisfaction of the claim has been made, the Purchase requisition mentioned above will be annulled by issuing a receipt for returned goods; with this receipt the customer can purchase another product with the same price in case the claim has proved grounded.

e) NEG Ltd preserves the right to make in situ reports from the claims they have received, for the purpose of checking every aspect that might be useful for better consideration of warranty claims; for this reason the customer shall not make any changes in installation conditions which are reasons for the claim without prior written consent of the Technical Department.

4) Limitation of liability

a. NEG Ltd is not liable before the customer, neither directly nor indirectly, for any non-fulfillment or delay at applying the warranty obligations which might originate from external pressure of other circumstances outside NEG Ltd

b. The liability of NEG Ltd under this Warranty Certificate is limited to the abovementioned obligations and up to the sum in accordance with the purchase receipt of the product to be claimed; excluded is any liability for indirect damages such as loss of data at information applications, loss of production thermal variations at the service, etc. which do not violate the applicable regulations of any country concerning product liability.

c. Abovementioned warranty limitations will be applied in any cases, and when they do not violate the regulations in any country concerning product liability. If this circumstance annuls some of preceding clauses, annulment will refer only to this clause, while the others will remain valid. In conclusion, excluded is application of any Regulation pointed out in this Warranty which violates the Law 23/July 10, 2003 and Directive 1999/44/EU concerning water heaters and their use on the territory of the EU.

Any other warranty right that is not mentioned in this Warranty Certificate is excluded

INTRODUCTION

natutech with Head Office in Shumen, Bulgaria, is specialized in manufacturing of alternative energy sources. Two hundred highly qualified employees work for this company. The company has production facilities of its own which take an area of 15,000 square meters. Many times our products have been awarded with gold medals at the International Fair Plovdiv. In 2004 our production was certified under the Quality Management System ISO 9001:2000, and in 2005 it got certificates CE and TUV.

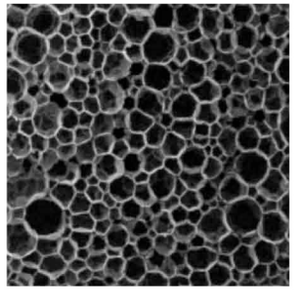
For several years now the company has been manufacturing and selling sun systems with the trademark natutech These products find better and better realization both on Bulgarian and international markets. The company has a distribution network all over the country which consists of 52 distributors and 100 retailers. At that moment natutech has subsidiaries in Italy, Spain and Romania. We sell our products in many countries in Europe, Asia and Africa.

Dear Customers,
We strongly hope that the appliance you have bought from us will contribute to creating comfort at you homes and decreasing the energy expenditure. This User Manual includes technical description of the unit you have bought and operation instructions. It has been prepared to make you familiar with the installation, operation and maintenance of the water heater. Observing the instructions of this Manual is in the interest of the customer, and it is one of the guarantee terms and conditions.

Advantages:
1) The buffer vessel is used in heating installations for accumulating heat or cold. It protects the boiler in its hot-cold operational mode, with which the service life of the boiler increases considerably.
2) This water heater is suitable for connecting to heating systems, solar heating systems and other systems designed for indirect supply of domestic hot water to great number of consumers.
3) The water heater is made of high quality steel S235JR (EN 10025)
4) The working pressure of the buffer vessel is 3 bar.
5) Models PR and PR2 have one or two built-in coil type internal heat exchangers with large heat exchange area for heating the water.
6) The external insulation is made of 100 mm thick soft polyurethane with PVC coating in conformity with DIN 4753-8
7) The combined water heater has 1/2? connecting points for temperature sensors, 1" connecting points for connection with heating systems, and 1? connecting points for connection to solar heating systems. It also has 1 ?? connecting points for electric heaters (see the chart with technical characteristics).

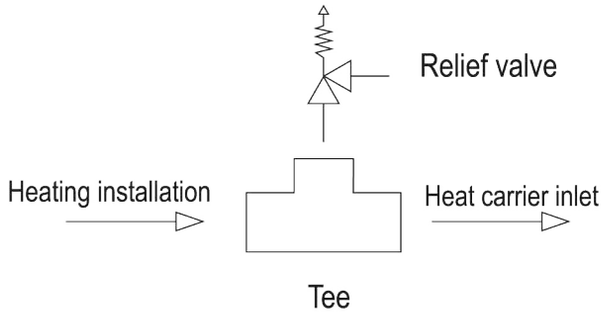
1. INSULATION

Water heaters with capacity 500 to 5000 liters are insulated with 100 mm thick soft temperature-resistant foamed polyurethane with density of 23 kg/m^2.
The decorative coating of water heaters is made of soft PVC foil in different colors.



A microscopic view of polyurethane

2. CONNECTION DIAGRAM OF RELIEF VALVE OF BUFFER VESSEL



The customer as well should monitor the anticorrosion system (magnesium anode/Correx up, etc.). He should periodically check the magnesium anode and replace it depending on the geographic location at intervals depending on the type of water (soft of hard) of the region where the water heater is being used.

c) The warranty certificate is considered void for water heaters whose serial identification numbers have been modified, removed or blurred, or cannot be expressly attested.

d) Damages in the appearance of products shall not be considered as defects except for those ones which cause losses during operation or change technical characteristics of water heaters set forth in brochures.

e) natutech preserves the right, in case of replacement, to deliver another model of water heater in order to fulfill approved warranty claims when the original model is not being manufactured.

3) Claiming warranty

Every customer who has purchased a water heater from natutech, and who has good reasons to lay a warranty claim, shall proceed as follows:

a) Immediately notify in writing:
1) The installer, or the company that has sold the water heater to him, or
2) The distributor firm, or
3) The commercial representative of natutech in the region.
For this purpose the claimant shall fill out a claim form; the latter shall be accompanied by the document proving the purchase of the water heater (invoice) with the date of purchase in it.

b) After receiving the claim form, natutech considers it and makes decision whether the claim has grounds, and whether the defect is within the scope of the warranty set forth in this certificate for limited warranty; after which informs the customer as to its decision and the steps he shall follow.

c) The return of a product cannot be done without written authorization issued by the Quality Department. The return procedure shall be according to RMA (Return Material Authorization).

9. WARRANTY CERTIFICATE OF WATER HEATERS

1) Manufacturing defects and materials guarantee
natutech expressly guarantees that the products it manufactures shall be free from defects in materials and workmanship which can prevent from normal operation under proper and normal use, installation and maintenance for the intended functions of the products for a period set out in the warranty certificate of the respective water heater model you have bought. The warranty period begins from the date indicated in the purchase invoice. If a product or any component thereof is determined to be defective in manufacture or materials, natutech will repair or replace the defective component or product.

2) Exclusions and Limitations of Warranty Coverage

a) The customer can claim warranty during warranty period of respective product immediately after any defects have been determined, except for in case of noticeable defects at the moment of purchase, in which case the customer must make the claim at the shop immediately after noticing the defect as it is provided for in the general conditions of sale.

b) This warranty certificate is considered void in cases when defects and errors in functioning of products are caused by:

1) Accidents, installation on movable structures, negligence, improper care or nonconformity.

2) Failure to observe the installation, use and maintenance instructions set forth in the installation manual of respective product.

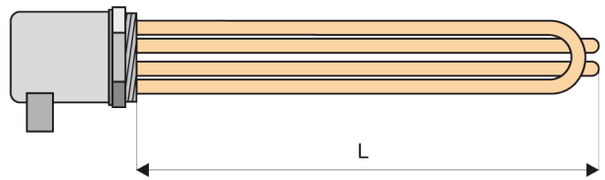
3) Improper installation and use as well as changes, especially if they are not made by authorized after-sale service personnel of natutech

4) Testing and operation pressures greater than values established by natutech and set forth in product manuals, or use of water with characteristic values exceeding:
- Dissolvable salts – 500 mg/l;
- Calcium carbonate – 200 mg/l;
- Free carbon dioxide – 50 mg/l;
- ph content – minimum 5 and maximum 12.

5) Freeze, flood, natural disasters or third party actions as well as any interventions into normal functioning conditions of water heaters and the control of natutech

3. ELECTRIC HEATING ELEMENT. WIRING DIAGRAM

The following electric heating elements can be connected to the buffer water heaters: 3000W / 230V; 4500W / 230V; 6000W / 230V; 7500W / 400V. The water heaters have double safety protection thermostats with temperature range from 30°C to 80°C. Triggering temperature 95°C; 3+2 contacts 10 (2.5) A 230V; IP 40 protection; differential 8°C±3°C.

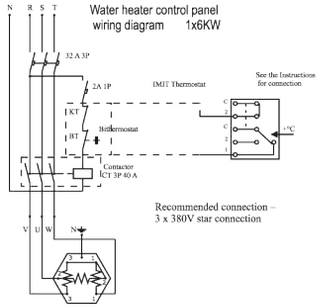


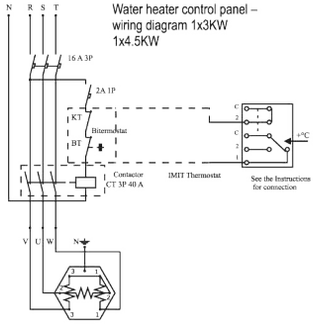
Power (W)	L (мм)	Connection	Voltage (V)
3000	210	1 1/2"	230/400
4500	320	1 1/2"	230/400
6000	410	1 1/2"	230/400
7500	590	1 1/2"	230/400

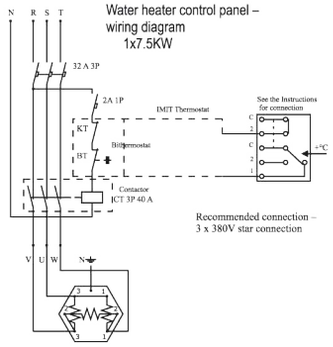
The connection of the electric heating element to the electric power supply must be done by qualified electricians. When connect the heating element to the electric network, make sure that it is properly grounded.

ATTENTION! In this manual we show a wiring diagram of a water heater control panel.

4. THERMOMETER







5. THERMOSTAT

This is an adjustable double THERMOSTAT which is designed to regulate the water temperature and ensures safety tolerance; it can be manually adjusted (TLSC model) or automatically adjusted (TLSC/A model).

CONFORMITY WITH STANDARDS

This product is in conformity with:

-EN 60730-1 and subsequent editions;

-EN 60730-2-9

CONFORMITY WITH REGULATIONS

This product complies with:

-Low Voltage Directive 73/23 EEC

-Electromagnetic Compatibility Directive 89/336/EC

TECHNICAL CHARACTERISTICS

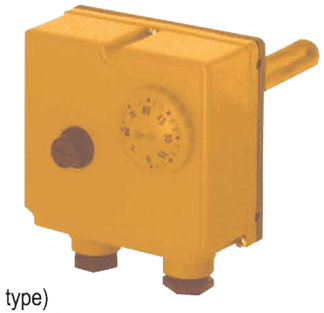
Temperature range –

regulation: 0oC ÷ 90oC, limit: 90oC ÷ 110oC

Tolerance – regulation: ± 5k, limit – 15k; – 6k (depends on the type)

Temperature differential – regulation 6 ± 2k; 4 ± 1k (depends on the type),

limit 25 ± 8k; 15± 8k (depends on the type)



8. TRANSPORT AND PACKING

The buffers can be with or without insulation. They are secured on a pallet packed with foil.

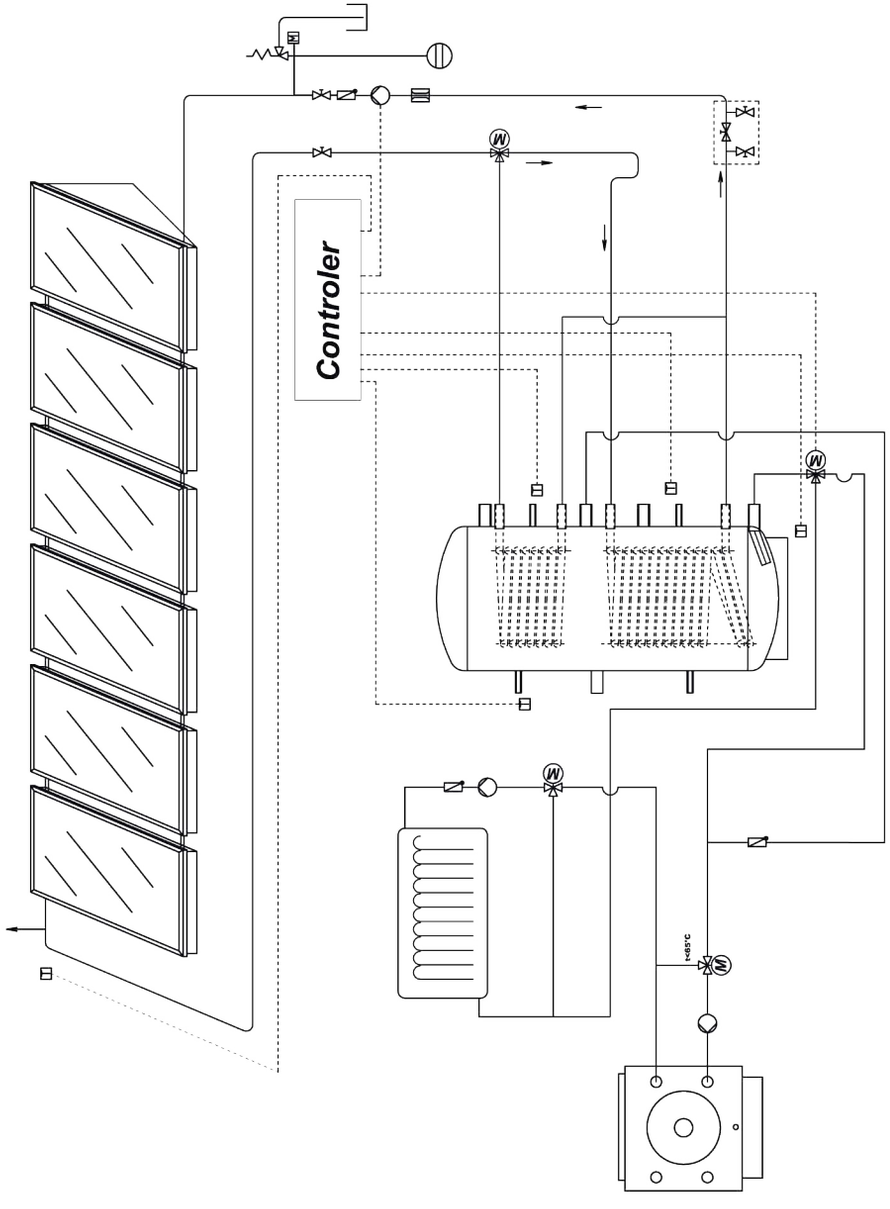
Water heater	P 500	P 800	P 1000	P 1500	P 2000	P 2500
Dimensions of pallet (without insulation)	650x650	790x790	790x790	1000x1000	1150x1150	1150x1150
Dimensions of pallet (with insulation)	900x900	1050x1050	1050x1050	1250x1250	1400x1400	1400x1400

Insulation, decorative cover and rosettes can be delivered separately.

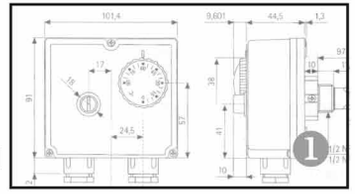
Advantages:

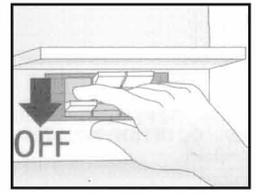
1) Easy transportation (takes less space at transportation).
2) Easy conveyance to the place of installation.
3) Easy and quick packing of the water heater with soft insulation. All necessary openings in the soft polyurethane casing are made beforehand, and the installer has only to find them and take them out. The casing is fastened by a zipper at the assembly platform.

7.3. DIAGRAM for MODEL PR 2 - connecting the boiler, buffer, solar system

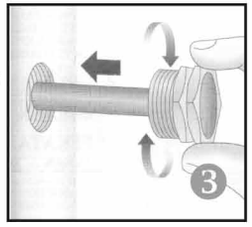


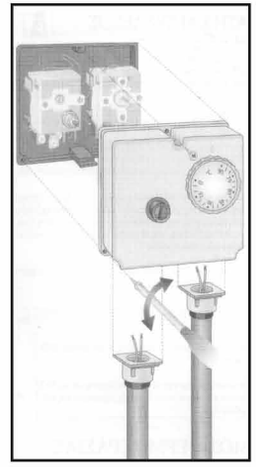
Automatic adjustment (TLSC/A) and manual adjustment (TLSC).
Degree of protection = IP 40
Insulation class = I.
Temperature change rate = <1K/min
Maximal temperature point = 80oC
Maximal temperature for electric lamp = 125oC
Accumulation temperature = -15oC ÷ 55oC
Maximum pressure of the cartridge = 10 bar
Constant time = <1?
Electric connection – …….
Terminal – circuit breaker or switch-on contacts.
Switch-on action – 2B
Place of installation – normal
Type of wire – M20 x 1.5



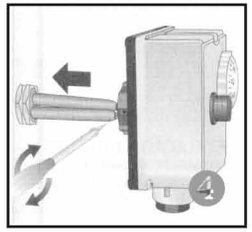


INSTALLATION AND CONNECTION
Safety instructions:
Before connecting the thermostat, make sure that THE UNIT TO BE THERMALLY CONTROLLED (water heater, pump, etc.) IS NOT CONNECTED to the power supply network and is in compliance with the instructions in Figure 2.

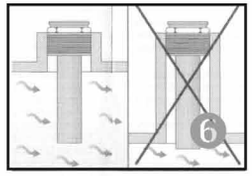




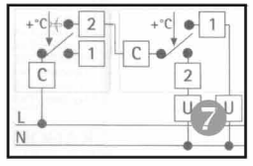
WARNING
All installation operations, including manual adjustments, must be fulfilled by a qualified specialist following all safety conditions.
A) See Figures 3 and 4;
B) Unscrew the three bolts and remove the front part of the thermostat. Unravel the power supply wires and connect them to the terminals of the thermostat (Figure 5) following the instructions.



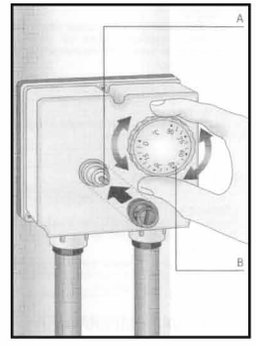
NOTE: See Figure 6.
To close the front part, the cartridge opening must align with the coupling of the adjustment knob.



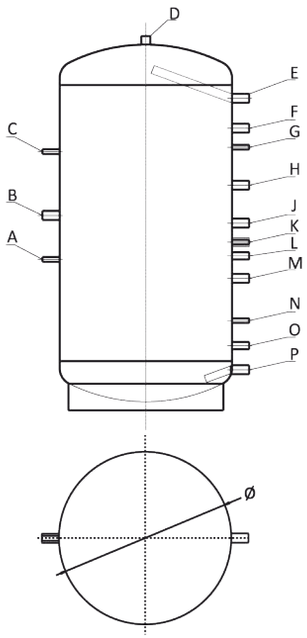
CONNECTION (Figure 7)
LIMITATION
TERMINAL 2 – opens the circuit when the temperature rises.
TERMINAL C – common contact.
THERMOSTAT
TERMINAL 1 – opens the circuit when the temperature rises.
TERMINAL 2 – closes the circuit when the temperature rises
TERMINAL C – common contact



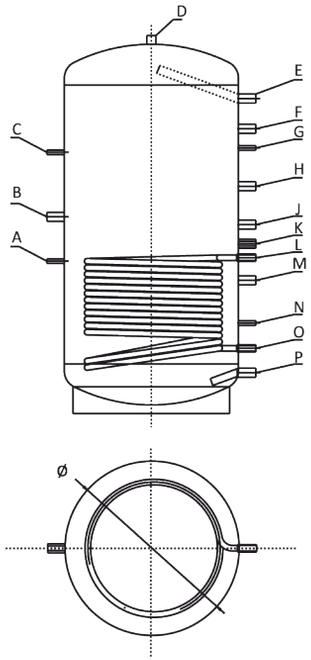
TEMPERATURE ADJUSTMENT (see Figure 8)
A – Reset button (only for TLSC)
B – Knob for temperature adjustment



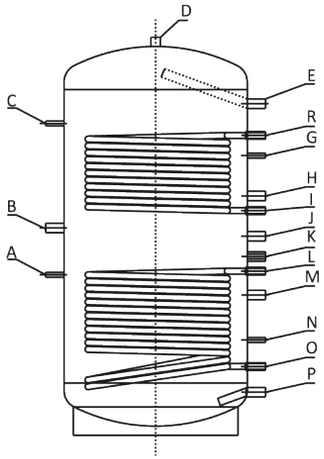
6. DIAGRAMS AND TECHNICAL CHARACTERISTICS OF P, PR and PR2

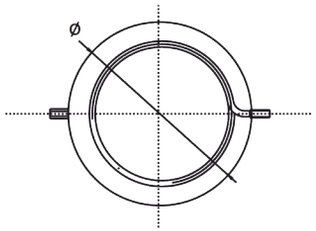


model P



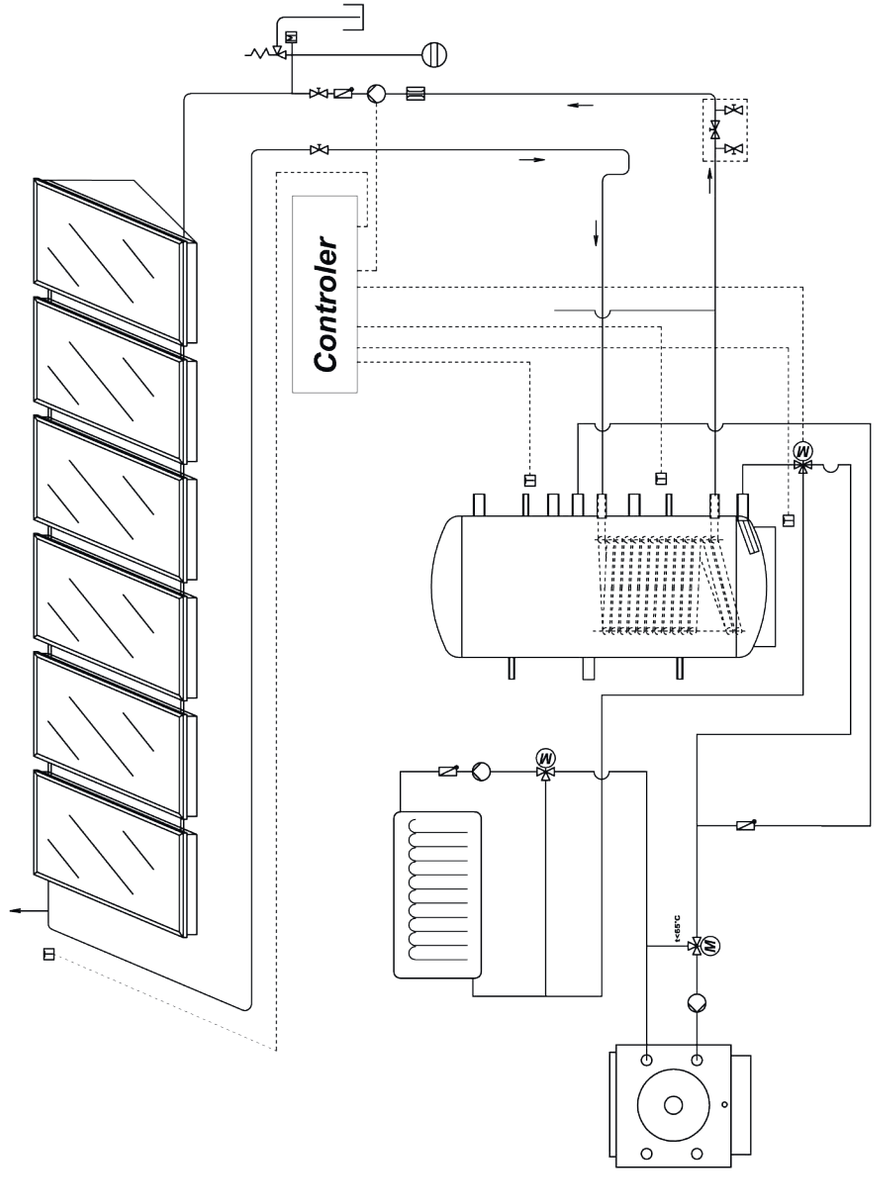
model PR





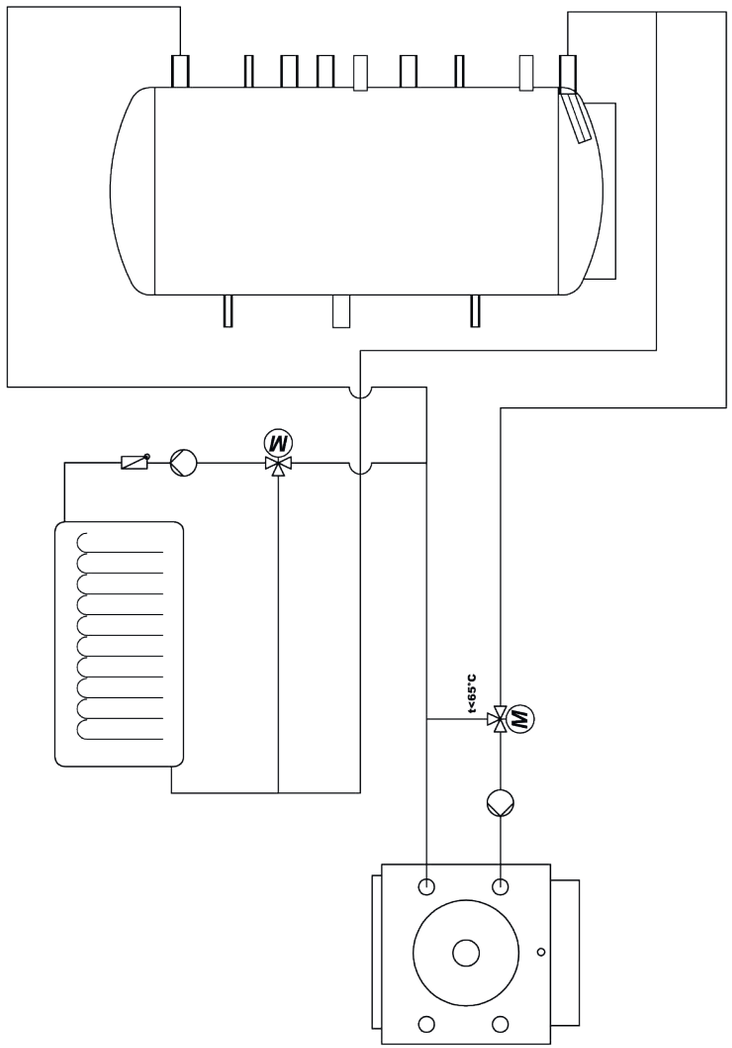
model PR 2

7.2. DIAGRAM for MODEL PR - connecting the boiler, buffer, solar system



7. CONNECTION DIAGRAMS

7.1. DIAGRAM for MODEL P - connecting the boiler, buffer, solar system



Technical specifications Model P:

Model P		P 300	P 500	P 800	P 1000	P 1500	P 2000	P 2500
Volume	l	300	500	800	1000	1500	2000	2500
Diameter / w. insulation	mm	550/750	650/850	790/990	790/990	1000/1200	1150/1350	1150/1350
Height / w. insulation	mm	1410/1460	1610/1660	1860/1910	2040/2090	2170/2220	2200/2250	2680/2730
Mounting height	mm	1430	1640	1900	2075	2220	2260	2730
Operating press. / Buffer temp.	bar/°C	3/95	3/95	3/95	3/95	3/95	3/95	3/95
Recommend.size of boiler connected to the buffer	kW	6-10	10-17	15-27	18-33	27-50	36-67	45-83
Sensor sleeve ½"	A	410	410	570	580	875	920	920
Sleeve for heating el. 1½"	B	760	790	920	1130	1130	1170	1170
Sensor sleeve ½"	C	1060	1120	1290	1500	1500	1690	1690
Connection 1½"	D	1410	1610	1860	2040	2170	2200	2680
Connection 1½"	E	1170	1370	1573	1742	1808	1820	2300
Connection 1½"	F	-	-	1390	1520	1635	-	-
Sensor sleeve ½"	G	1010	1120	1290	1450	1525	1590	1670
Connection 1½"	H	880	990	-	-	1305	1420	1670
Connection 1½"	J	770	880	980	1060	1085	1170	1420
Connection ½",1½"	K	-	-	-	-	975 (½")	-	1170 (1½")
Connection 1"	L	660	770	820	880	895	980	980
Connection 1½"	M	540	620	670	730	765	735	735
Sensor sleeve ½"	N	420	460	465	495	520	500	500
Connection 1"	O	260	250	310	310	375	380	380
Connection 1½"	P	150	150	170	170	235	230	230
Weight	kg	77	99	126	152	274	382	423

Technical specifications Model PR:

Model PR		PR 300	PR 500	PR 800	PR 1000	PR 1500	PR 2000	PR 2500
Volume	l	300	500	800	1000	1500	2000	2500
Diameter / w. insulation	mm	550/750	650/850	790/990	790/990	1000/1200	1150/1350	1150/1350
Height / w. insulation	mm	1410/1460	1610/1660	1860/1910	2040/2090	2170/2220	2200/2250	2680/2730
Mounting height	mm	1430	1640	1900	2075	2220	2260	2730
Lower coil S1 Heat exchanging surface Volume	m^2 l	1.0 6.2	1.7 10.5	2.9 17.9	3.0 18.5	3.4 21.0	4.0 24.6	4.0 24.6
Operating press./ Coil temp.	bar/°C	16/110	16/110	16/110	16/110	16/110	16/110	16/110
Operating press. / Buffer temp.	bar/°C	3/95	3/95	3/95	3/95	3/95	3/95	3/95
Recomm. size of boiler connected to the buffer	kW	6-10	10-17	15-27	18-33	27-50	36-67	45-83
Sensor sleeve ½"	A	410	410	570	580	875	920	920
Sleeve for heating el. 1½"	B	760	790	920	1130	1130	1170	1170
Sensor sleeve ½"	C	1060	1120	1290	1500	1500	1690	1690
Connection 1½"	D	1410	1610	1860	2040	2170	2200	2680
Connection 1½"	E	1170	1370	1573	1742	1808	1820	2300
Connection 1½"	F	-	-	1390	1520	1635	-	-
Sensor sleeve ½"	G	1010	1120	1290	1450	1525	1590	1670
Connection 1½"	H	880	990	-	-	1305	1420	1670
Connection 1½"	J	770	880	980	1060	1085	1170	1420
Connection ½",1½"	K	-	-	-	-	975 (½")	-	1170 (1½")
Lower coil inlet 1"	L	660	770	820	880	895	980	980
Connection 1½"	M	540	620	670	730	765	735	735
Sensor sleeve ½"	N	420	460	465	495	520	500	500
Lower coil outlet 1"	O	260	250	310	310	375	380	380
Connection 1½"	P	150	150	170	170	235	230	230
Weight	kg	92	129	161	194	316	424	465

Technical specifications Model PR 2:

Model PR 2		PR2 300	PR2 500	PR2 800	PR2 1000	PR2 1500	PR2 2000	PR2 2500
Volume	l	300	500	800	1000	1500	2000	2500
Diameter / w. insulation	mm	550/750	650/850	790/990	790/990	1000/1200	1150/1350	1150/1350
Height / w. insulation	mm	1410/1460	1610/1660	1860/1910	2040/2090	2170/2220	2200/2250	2680/2730
Mounting height	mm	1430	1640	1900	2075	2220	2260	2730
Lower coil S1 Heat exchanging surface Volume	m^2 l	1.0 6.2	1.7 10.5	2.9 17.9	3.0 18.5	3.4 21.0	4.0 24.6	4.0 24.6
Upper coil S2 Heat exchanging surface Volume	m^2 l	0.5 3.1	1.0 6.2	1.8 11.1	2.0 12.3	2.4 14.8	2.4 14.8	2.4 14.8
Operating press./Coils temp.	bar/°C	16/110	16/110	16/110	16/110	16/110	16/110	16/110
Operating press. /Buffer temp.	bar/°C	3/95	3/95	3/95	3/95	3/95	3/95	3/95
Recommend. size of boiler connected to the buffer	kW	6-10	10-17	15-27	18-33	27-50	36-67	45-83
Sensor sleeve ½"	A	410	410	570	580	875	920	920
Sleeve for heating el. 1½"	B	760	790	920	1130	1130	1170	1170
Sensor sleeve ½"	C	1060	1120	1290	1500	1700	1690	1690
Connection 1½"	D	1410	1610	1860	2040	2170	2200	2680
Connection 1½"	E	1170	1370	1573	1742	1808	1820	2300
Upper coil inlet 1"	R	1080	1270	1390	1520	1635	1670	1920
Sensor sleeve ½"	G	1010	1120	1290	1450	1525	1590	1867
Connection 1½"	H	880	990	-	-	1305	1420	1670
Upper coil outlet 1"	I	880	990	1072	1172	1225	1310	1560
Connection 1½"	J	770	880	980	1060	1085	1170	1420
Connection ½",1½"	K	-	-	-	-	975 (½")	-	1170 (1½")
Lower coil inlet 1"	L	660	770	820	880	895	980	980
Connection 1½"	M	540	620	670	730	765	735	735
Sensor sleeve ½"	N	420	460	465	495	520	500	500
Lower coil outlet 1"	O	260	250	310	310	375	380	380
Connection 1½"	P	150	150	170	170	235	230	230
Weight	kg	100	140	185	220	348	456	497